

Claims

1. An apparatus for optical interconnection comprising:
 - a first circuit board;
 - a second circuit board adjacent to the first circuit board;
 - a light source coupled to the first circuit board, the light source being adapted to transmit an optical signal;
- 5 a photo detector coupled to the second circuit board, wherein the second circuit board and the first circuit board are arranged with respect to each other such that the photo detector receives the optical signal over an optical transport medium.
- 10 2. The apparatus of claim 1 wherein the optical transport medium is free space.
3. The apparatus of claim 1 wherein the optical transport medium is a light pipe.
4. The apparatus of claim 3 wherein a ferrule is connected to the light pipe to guide a light from the light source.
5. The apparatus of claim 1 wherein the light source comprises one of a laser and a light emitting diode.
6. The apparatus of claim 5 wherein the laser is a vertical cavity surface emitting laser.
7. The apparatus of claim 1 wherein the photo detector is a photo diode.
8. The apparatus of claim 5 wherein the light source comprises a lens that focuses a light from the light source.

9. The apparatus of claim 4 wherein the light pipe comprises a transparent cylinder made of plastic.

10. The apparatus of claim 1 wherein the first circuit board comprises an electrical connector that is adapted to mate with another electrical connector on the second circuit board.

11. The apparatus of claim 1 wherein the first circuit board has a first surface for mounting components thereon and the second circuit board has a second surface for mounting components thereon; and

wherein the first circuit board and the second circuit board are affixed with respect to each other such that the first surface is parallel to the second surface.

12. The apparatus of claim 1 further comprising:

another light source coupled to the second circuit board, the another light source being adapted to transmit another optical signal;
another photo detector coupled to the first circuit board, wherein the

second circuit board and the first circuit board are arranged with respect to each other such that the another photo detector receives the another optical signal over another optical transport medium.

13. The apparatus of claim 3 wherein the light pipe includes a lens that focuses light from the light source.

14. The apparatus of claim 4 wherein the ferrule includes a physical well.

15. The apparatus of claim 1 wherein the photo detector comprises a lens that focuses a light from the light source.

16. A method for interconnecting a first circuit board with a second circuit board, the method comprising:

affixing the first circuit board adjacent to the second circuit board; transmitting over an optical transport medium an optical signal from a light source on the first circuit board to a photo detector on the second circuit board.

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17. The method of claim 16 further comprising the step of transmitting over an optical transport medium an optical signal from a light source on the second circuit board to a photo detector on the first circuit board.

18. The method of claim 16 wherein the optical transport medium is free space.

19. The method of claim 16 wherein the optical transport medium is a light pipe.

20. The method of claim 19 wherein a ferrule is connected to the light pipe to guide a light from the light source.

21. The method of claim 16 wherein the light source comprises one of a laser and a light emitting diode.

22. The method of claim 21 wherein the laser is a vertical cavity surface emitting laser.

23. The method of claim 16 wherein the photo detector is a photo diode.

24. The method of claim 21 wherein the light source comprises a lens that focuses a light from the light source.

25. The method of claim 20 wherein the light pipe comprises a transparent cylinder made of plastic.

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26. The method of claim 16 wherein the first circuit board comprises an electrical connector that is adapted to mate with another electrical connector on the second circuit board.
27. The method of claim 16 wherein the first circuit board has a first surface for mounting components thereon and the second circuit board has a second surface for mounting components thereon; and
wherein the first circuit board and the second circuit board are affixed
5 with respect to each other such that the first surface is parallel to the second surface.

2025 RELEASE UNDER E.O. 14176